

Strategic Choice of Intelligent Logistics Enterprises Based on Internet Platform

-- A Case Study of Zhongchu Smart Logistics Corporation

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Abstract: As an important part of the national economy, the logistics industry is on the road of Internet+ development. Intelligent logistics based on Internet platform is an effective way to cope with the challenges of rapidly changing customer expectations, seize the opportunities brought by new technologies and promote new business models. From the perspective of strategic choice, the purpose of this paper is to take the storage and intelligent transportation of China's large modern integrated logistics enterprises, Zhongchu Smart logistics, as an example to study the strategic choice of traditional freight logistics type of enterprises in terms of business model, service products, technology application, and their own organizational structure when transforming into intelligent logistics enterprises based on the Internet platform. Through the qualitative and quantitative analysis of the relevant aspects of the research object, the core elements of the strategic choice for the transformation and construction of intelligent logistics enterprises are obtained, which provides the basis and reference for relevant enterprises. In this paper, Zhongchu Smart logistics has built an intelligent online freight platform using advanced technologies such as the Internet of Things and big data to achieve enterprise marketing and transportation capacity management, logistics operation process management and services; Extend the network freight platform to the upstream and downstream services of the industrial chain, build a logistics ecology, and coordinate multimodal transport, financial and digital solution services; Building a flat, efficient and fast organizational structure will greatly enhance the competitiveness of enterprises and may occupy long-term advantages in the future development of the industry.

Keywords: internet, smart logistics, strategy management

1. Introduction

In 2015, China formally put forward the development idea of "Internet+", which defined the deep integration of "Internet+" and traditional industries to upgrade or even subvert the business model and development model of traditional industries, improve the innovation and productivity of the real economy, and promote the overall development of the industry [1]. Since 2015, all industries in China have been basically affected by the Internet, even including government poverty alleviation, government services, health care and other aspects. Industrial innovation and development models

based on the Internet, new infrastructure, and new technology applications have been emerging, providing more strategic choices and development directions for industries and enterprises, and certainly contributing to the sudden change in the industrial competition pattern, The ecological competition with the industrial Internet platform as the core is constantly upgrading [2]. Traditional enterprises must actively embrace the Internet, take the initiative to formulate development strategies and action paths based on new technologies and new development patterns, and take the initiative to achieve the deep integration of online and offline businesses, so as to have sustained momentum and space for development.

The logistics industry plays a vital role in the economic development and is an important part of the real economy. In 2021, China's GDP will total 11.437 billion yuan, including 16.7 trillion yuan of national social logistics costs, accounting for 14.6%. In the United States, the logistics expenditure accounts for about 8% of the total GDP. In the country with the lowest efficiency, the logistics cost may be as high as 25% of GDP [3]. High logistics cost will affect the efficiency of global value chain of manufacturing industry and the competitiveness of a country's economy. The rapid development of Internet based cloud computing, the Internet of Things, artificial intelligence (AI) and the fifth generation communication technology has promoted the deep integration of the new generation of information technology and the real economy in various fields, which is an important way for China to achieve industrial innovation and structural optimization [4]. There is no doubt that developing an Internet based intelligent logistics system to improve logistics efficiency and reduce logistics costs is the future development direction of the logistics industry and logistics enterprises. At the same time, with the development of Internet+, many new and profound changes have taken place in the logistics industry. For example, from the technical point of view, logistics information technology is rapidly popularized, and all aspects of logistics are electronic and visualized from order, transportation, warehousing, loading and unloading, distribution, processing, etc; From the perspective of cost and efficiency, sales response and logistics matching are optimized and fast, services are more refined and costs are more controllable; From the perspective of business model, the logistics industry, financial industry, manufacturing industry and other industries are interconnected, and the railway, waterway and highway Multimodal transport. All of these will promote the logistics industry to integrate more closely with the real economy, and also promote the logistics industry to embrace the Internet faster and build core competitiveness.

This paper intends to discuss the Internet based intelligent logistics strategic development options of China's modern road transport enterprises and the development path of leading enterprises in the industry through the comprehensive analysis of qualitative and quantitative, static and dynamic information and data on the business model, technology applications, organizational structure and other aspects of China's large modern integrated logistics road transport enterprises, So as to discuss the development direction of China's road transport enterprises.

2. Development Process and Main Model Evolution

2.1. Development History of China's Internet+Internet Freight Industry

China's Network freight industry has experienced three stages of development:

First, in 2014-2016, the concept of "Internet+Logistics" rose, and vehicle cargo matching platforms exploded: in 2016, the Ministry of Transport of China issued the 'Opinions of the General Office of the Ministry of Transport on Promoting the Reform Pilot and Accelerating the Innovative Development of Vehicle free Carrier Logistics', announcing the launch of the pilot work of vehicle free carrier [5];

Second, 2016-2019, the "vehicle free carrier" stage: after three years of pilot, platform economy and economies of scale have gradually emerged. In September 2019, the Ministry of Transport and

the State Administration of Taxation jointly issued the ‘Interim Measures for the Operation and Management of Road Freight Transport on Network Platforms’, which changed the name of "vehicle free carrier" to "operator of road freight transport on network platforms", marking the success of the pilot work of vehicle free carrier [5];

Third, from 2019 to now, the stage of strict supervision: with the promulgation of the ‘Interim Measures for the Operation and Management of Road Freight Transport on Network Platforms’, the industry reshuffle has accelerated and the industry has entered a mature stage of development [5].

In the Internet economy, core enterprises play a leading role, which can be called leading enterprises. Decisions of other enterprises will depend on the decisions of core enterprises to some extent [6]. With the road network freight industry entering the stage of strict supervision, the scale effect of the industry appears, leading enterprises grow rapidly and competition intensifies. At present, the three largest enterprises in China's network freight platform business scale are Manbang, Huolala and Zhongchu Smart logistics. Among them, Manbang is the absolute leader in the field of trunk logistics, accounting for 90% of the market share, and Huolala is the leader in the freight market in the same city, accounting for more than 50% of the market share. According to CIC data, Manbang's GTV (total platform transactions) is the largest digital freight platform in China in 2020, and the number of registered heavy and medium-sized truck drivers is more than twice that of the second to fifth largest digital freight platform as of December 31, 2020. At the same time, the average annual growth rate of GTV of the three enterprises is more than 30%, with the highest being 57% of Manbang Group, indicating that the future market space is still vast and the growth of the head enterprises is good. As a traditional logistics enterprise, the transformation of Zhongchu Smart logistics into an Internet+smart logistics enterprise has achieved initial results [5]. As the focus of this study, it provides reference for the transformation and upgrading of traditional enterprises in the industry.

2.2. Research and Analysis of Zhongchu Smart Logistics

2.2.1. Current Situation of Zhongchu Smart Logistic

The parent company of Zhongchu Smart logistics, CMST Development Co.,Ltd. (Hereinafter referred to as "CMST") is an A-share listed company. The main businesses of CMST include time and spot delivery logistics, bulk commodity supply chain, Internet+logistics, engineering logistics, consumer goods logistics, financial logistics, etc. (see Figure 1 for details). Since 2013, CMST has successively invested in the establishment of China Storage Hengke Internet of Things System Co., Ltd. and China Storage Nanjing Intelligent Logistics Technology Co., Ltd. (Hereinafter referred to as "Zhongchu Smart logistics"), basically forming the strategic business sector of "logistics+Internet".

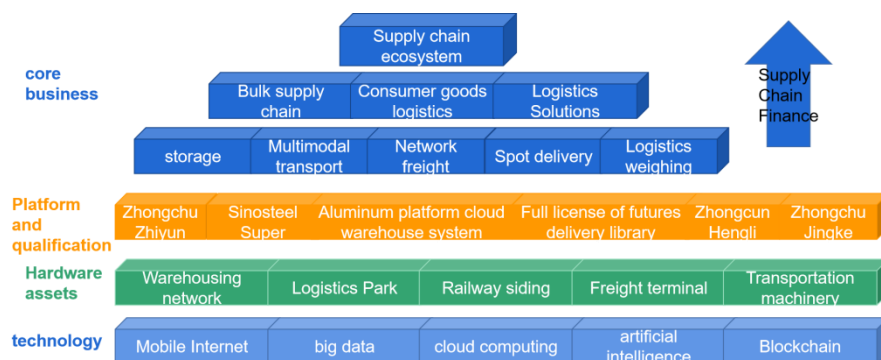


Figure 1: Structure of commercial sector of China Reserve Bank.

Zhongchu Smart logistics is an Internet based national network intelligent freight platform enterprise built by CMST. In 2021, it will achieve revenue of 27.688 billion yuan, with a year-on-year growth of 35.31%; The total transaction tonnage was 276 million tons, up 29.6% year on year; The total number of orders was 7.03 million, up 26.3% year on year; 406100 new senior members; 6545 new owners were added [7]. In 2021, the main business income will rank the second among domestic key road freight enterprises, second only to downwind express.

2.2.2. Analysis of Zhongchu Smart Logistics's Business Model

The overall goal of the construction of the business model of Zhongchu Smart logistics (Figure 2) is to realize the development path of low cost, high efficiency, high-quality service and green environmental protection [8], and form the core competitiveness in the logistics industry.

Table 1: Commercial Canvas of Zhongchu Smart logistics.

<p>Important cooperation</p> <ul style="list-style-type: none"> ● Transportation companies, fleets and individual drivers providing transportation capacity ● Banks and other financial institutions providing funds ● Insurance companies providing cargo transportation insurance services ● Companies providing system support, vehicle positioning services and other services 	<p>Key business</p> <ul style="list-style-type: none"> ● Logistics capacity transaction business ● Financial business embedded in transport capacity transaction scenario ● Multimodal transport business ● Freight ecological services ● Transportation management system platform construction business 	<p>Value proposition</p> <ul style="list-style-type: none"> ● Provide customers with intelligent logistics integrated services and digital supply chain solutions to promote the coordinated development of the industrial chain ● The freight ecosystem business built by adopting the horizontal and vertical expansion strategy around the freight business promotes the sound development of the ecological chain [9] 	<p>Customer relationship</p> <ul style="list-style-type: none"> ● VIP customer department is responsible for the maintenance of key customers with a certain delivery volume ● Other customers are maintained by corresponding marketing personnel 	<p>Customer segmentation</p> <ul style="list-style-type: none"> ● Manufacturers and their subordinate logistics companies ● Traders ● Other transportation companies and information departments ● Fleet ● Individual driver
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Table 1: (continued).

	<p>Core resources</p> <ul style="list-style-type: none"> ● Intelligent logistics platform system ● Rich transportation resources ● Long term business accumulated full scenario data ● Professional operation support system ● Digital and information-based logistics management system ● Self owned software R&D team 	<p>Channel access</p> <ul style="list-style-type: none"> ● Development and expansion of marketing personnel ● Agent development 	
<p>cost structure</p> <ul style="list-style-type: none"> ● Freight paid to the driver ● Personnel cost, depreciation of fixed assets, capital cost, system usage costs such as Beidou and Huawei Cloud 	<p>Source of income</p> <ul style="list-style-type: none"> ● Freight ● Government tax refund ● Other value-added business income and diversion business share 		

2.2.2.1. Value Proposition

By building a core intelligent logistics platform and a third-party digital supply chain public platform (see 2.2.2.2 Core Resources - Intelligent Logistics Platform System for details), Zhongchu Smart logistics provides customers with intelligent logistics integrated services and digital supply chain solutions to promote the coordinated development of the industrial chain; At the same time, we will take a horizontal and vertical expansion strategy around the smart logistics business to carry out the construction of related ecological diversification, build a "digital logistics, supply chain ecosystem" (Figure 3) with logistics and supply chain, logistics finance, logistics new consumption, and logistics big data as the system, and promote the healthy development of the industrial ecological chain [9].

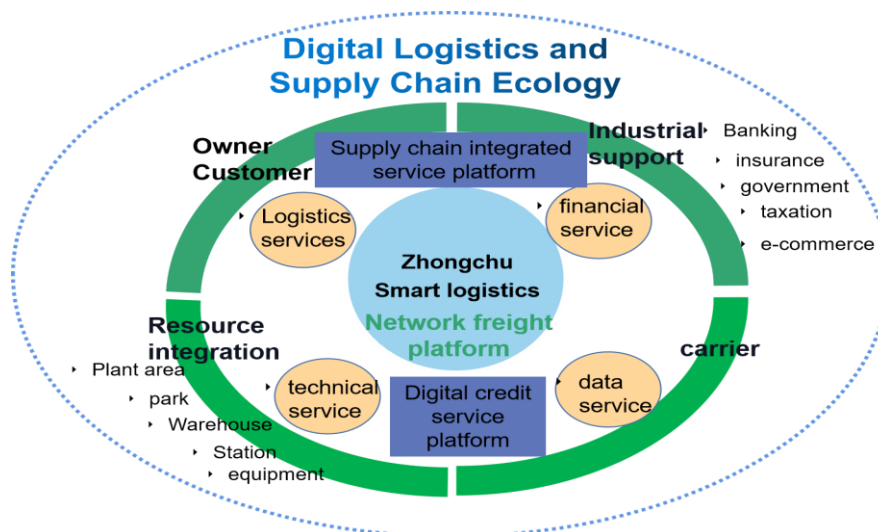


Figure 2: Digital logistics and supply chain ecosystem of Zhongchu Smart logistics.

2.2.2.2. Core Resources

1) Intelligent logistics platform system. First, the "Logistics Capacity Trading Sharing Platform" and "Network Freight Platform" were built to integrate the national vehicle and freight resources, which can not only break the "information island" situation of the distribution station, but also solve the transportation security problems that cannot be guaranteed by the logistics information matching platform. At the same time, the vehicle positioning function is used to monitor the freight dynamics throughout the process. As of December 31, 2021, the business scope of the platform has covered 31 provinces and autonomous regions, 450 cities across the country, 162800 transport routes, daily transport volume of more than 959700 tons, and monthly transaction amount of more than 2.9 billion yuan [7]. Second, based on the two logistics platforms, the blockchain technology is used to build a third-party digital supply chain public platform that aggregates various data elements such as logistics, commodity trading, payment and settlement, and financing of upstream and downstream enterprises in the supply chain, providing the underlying foundation for value-added services of the logistics ecological chain.

2) Rich transportation resources. Zhongchu Smart logistics has established a national transportation service network in important logistics node cities, forming a strong supply advantage and specialized freight capacity. More than 160 special railway lines can realize the national network transportation, and 2.7 million socialized transport vehicles have been integrated through the network freight platform, which can realize the national trunk and branch highway transportation [7].

3) Long term business accumulated full scenario data. Since the establishment of the enterprise eight years ago, the annual cargo volume of the core network freight transport platform has exceeded 210 million tons, involving all kinds of bulk means of production and living materials, and covering the whole country [7]. Since the online freight platform has adhered to the "over-the-counter transaction" mode from the very beginning, the platform directly signs electronic contracts with upstream cargo owners and downstream drivers to ensure that shipment from cargo owners, driver picking, on-site loading and unloading, in transit transportation, receipt confirmation, and freight settlement are all completed on the platform, and the platform has accumulated massive full scene data.

4) Professional operation support service system. According to the characteristics of upstream and downstream enterprises of China's logistics and freight transport, Zhongchu Smart logistics carries out offline+online "stereoscopic service" around customers by relying on the logistics big data accumulated on the platform and using prism system, CRM system and other tools. Upgrade from basic on-site service to integrated service, eliminate offline missing links of general network platforms, and effectively serve customers.

5) Digital and information-based logistics and management system. The enterprise attaches importance to the application of information and technology, keeps upgrading technology iteratively, and is in a leading position in the industry. In 2021, 1746 requirements will be developed, covering business system, mobile terminal, industry finance integration project, TMS project, WMS project, internal management ODBMS, etc. Online smart park management system to achieve interconnection with the network freight system; Intelligent logistics management system of the manufacturer; Complete the top-level design of intelligent supply chain public service platform products [7].

6) Self owned software R&D team: Since its establishment, Zhongchu Smart logistics has established a self research technology team, with a strong R&D team of more than 400 people, strong independent R&D capability, and a forward-looking technology research base as the goal to promote the construction of a national R&D center in Shanghai. After years of research and development, the company has formed its own product matrix system in the field of digital logistics and supply chain. At the technical architecture level, the company has formed a set of architecture systems that can be

expanded to customers, quickly respond to customers, and efficiently collaborate within the enterprise; In the application layer, the company has mastered a series of core algorithms; At the product level, the ability of standardized products and external output has been formed.

2.2.2.3. Key Business

1) Logistics capacity transaction business. As the main business of the company, the company has established a national transportation service network in important logistics node cities, forming a strong source of goods advantage and specialized freight capacity; 2) Financial business embedded in capacity transaction scenario. The financial service embedded in the freight logistics business scenario uses the platform to monitor the whole logistics process and control the risk of the business data accumulated for a long time by mining the capital needs of upstream and downstream customers. Including freight prepaid, freight loan, driver loan, etc. It also explores the development of new Internet financial logistics business models through the Internet platform, and connects with banks through the Internet platform, so that banks can find safe capital exports and customers can obtain fast, low interest rate funds[10];3) Multimodal transport business. Massive transport capacity resources have been integrated through the network freight platform. Relying on the parent company, CMST, in some inland and port logistics bases and the public rail and water multimodal transport sharing and trading platform, it has opened roads, railways, waterways, aviation and other comprehensive transport channels, realized the interconnection and resource sharing between upstream and downstream enterprises of multimodal transport, and provided customers with customized logistics solutions throughout the process and domestic Foreign multimodal transport service;4) Freight ecological services. The freight ecosystem business built by adopting the horizontal and vertical expansion strategy around the freight business, including oil and gas, cargo security, after car market, etc; 5) Transportation management system platform construction business. It provides large customers with digital logistics solutions integrating software, hardware, algorithms and blockchain technologies. From logistics scheme design, deployment to implementation, it improves customers' logistics management ability and logistics information level in an all-round way, creates value for customers, and steadily improves industry influence.

2.2.2.4. Customers, Channels and Partners

1) Main customers of the company: First, the cargo owner enterprise provides logistics transportation, multimodal transportation, financial and digital supply chain product services. Including the manufacturer and its subordinate logistics companies; Traders. Second, transport capacity providers provide freight ecology, finance and digital supply chain product services. Including other transportation companies and information departments; fleet; Individual drivers, etc.

2) Important partners: transport companies, fleets and individual drivers providing transport capacity; Banks and other financial institutions providing funds; Insurance companies providing cargo transportation insurance services; Companies providing system support, vehicle positioning services and other services.

3) Sales channel development: mainly developed by the company's marketing personnel or by the sales agency.

4) Customer relationship management: VIP customer department is responsible for the maintenance of large customers with a certain delivery volume; Other customers are maintained by the corresponding marketing personnel.

2.2.2.5. Revenue and Costs

1) Revenue source: freight; Government tax refund; Other value-added business income and diversion business share.

2) Cost structure: Logistics cost control is one of the most important objectives of logistics management. In order to reduce logistics cost, we should not only pay attention to the control of single logistics cost, but also manage it from the perspective of system cost, and study the daily relationship between logistics elements [12]. The main cost structure of Zhongchu Smart logistics includes the freight paid to drivers; Personnel cost, depreciation of fixed assets, capital cost, system use costs such as Beidou and Huawei Cloud. In recent years, enterprises have made efforts to integrate the logistics system according to the requirements of the lowest cost, and strengthen cost management and control.

2.2.3. R&D Investment and Technology Application of Zhongchu Smart Logistics

1) R&D investment

In the past two years, the R&D investment of Zhongchu Smart logistics has been increasing, and the importance of R&D has become increasingly prominent. See Table 1 for details.

Table 2: List of R&D investment and personnel of Zhongchu smart logistics [13,7].

project	2020	2021	Increase(%)
Total R&D investment (10000 yuan)	6050.39	9077.75	+50%
Proportion of total R&D investment in operating revenue (%)	0.12	0.12	—
Number of R&D personnel	235	257	+9.36%
Proportion of R&D personnel in the total number of the company (%)	4.8	5.2	+8.33%

2) Technology application

Zhongchu Smart logistics can keep up with the changes in the market and constantly innovate and improve its products and businesses. By using mobile Internet, cloud computing, big data, artificial intelligence and other technologies, Zhongchu Smart logistics has built a logistics capacity trading sharing platform to help logistics demanders, suppliers and other enterprises conduct free logistics capacity trading, and effectively operate and manage logistics through the online freight platform to achieve the organic unity of "business flow" and "logistics". On this basis, the blockchain technology is used to build a third-party digital supply chain public platform that aggregates various data elements such as logistics, commodity trading, payment and settlement, and financing of upstream and downstream enterprises in the supply chain. At the same time, it also provides large customers with a digital logistics solution integrating software, hardware, algorithms and blockchain technologies. From logistics scheme design, deployment to implementation, it comprehensively improves customers' logistics management ability and logistics information level, creating value for customers. Zhongchu Smart logistics has carried out the related ecological diversification construction around the two core platforms of "logistics transportation capacity trading sharing platform" and "network freight platform", and built a "digital logistics and supply chain ecosystem" composed of four business segments, namely, logistics and supply chain, logistics finance, logistics new consumption, and logistics big data.

2.2.4. Organizational Structure of Zhongchu Smart Logistics

Zhongchu Smart logistics has adopted the flat organizational structure commonly used by Internet enterprises (see Figure 4). Compared with traditional enterprises, Zhongchu Smart logistics has a relatively sound function, and its decision-making and market response are faster.

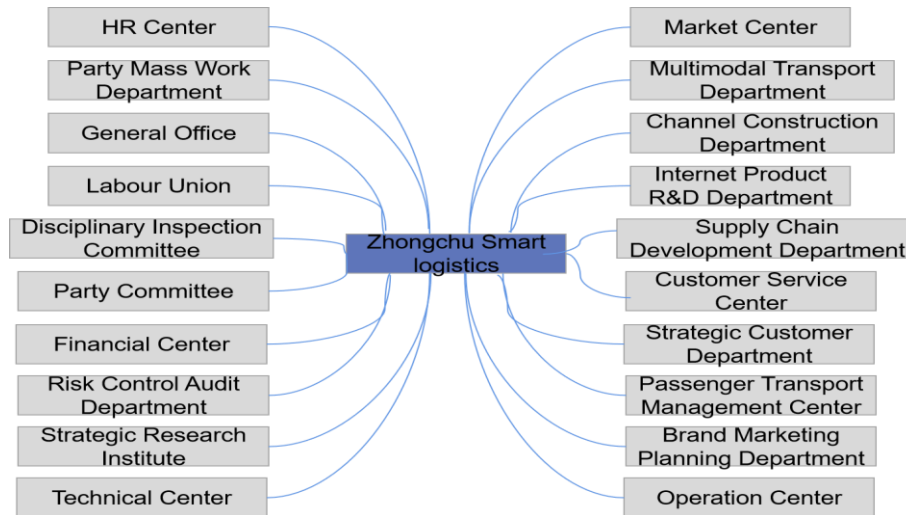


Figure 3: Organizational structure of Zhongchu smart logistics.

3. Discussion

Although the enterprise has developed rapidly in recent years, it still faces external challenges and its own related risks. At the same time, however, research shows that state-owned enterprises in China have institutional advantages in developing intelligent logistics, and can obtain more positive market reactions than non-state-owned enterprises [14]. Therefore, the Zhongchu Smart logistics is also actively responding to challenges, grasping trends and seizing opportunities to lead the development of the logistics industry in the future.

1) Coping with the aggravation of global economic risks: Although the trend of anti globalization is obvious and the impact of the new epidemic highlights [15], globalization is still the mainstream, and supply chain and industrial chain security will rise to the height of national security. In this process, a new round of technological and industrial revolution will continue to evolve, which objectively supports the localization, regionalization and decentralization of the global supply chain. The industry includes enterprises using two markets and two resources at home and abroad, which will achieve more robust and sustainable development in the long run.

2) Inadequate industrial standards and supervision: In September 2020, at the eighth meeting of the Central Financial and Economic Commission, it was again emphasized that the construction of a modern circulation system must be taken as an important strategic task. We will promote the construction of hardware and software for the modern circulation system as a whole, develop new circulation technologies, new forms of business, and new models, improve the institutional norms and standards in the circulation field, and foster and strengthen modern logistics enterprises with international competitiveness. In this context, the logistics standardization is being actively promoted. At the same time, with the promulgation of the Interim Measures for the Operation and Management of Road Freight Transport on Network Platforms, the industry operation will become more standardized [16].

3) Low industry concentration and low profitability: With the rapid development of unmanned technology, Internet of Things, big data, artificial intelligence and other innovative technologies of

the Internet platform, building a modern logistics information system and improving the industry threshold will become an effective way for the logistics industry to improve concentration, reduce costs and increase efficiency, and improve operational efficiency. This is also an effective way to solve the problem of low freight rates and limited profit space for enterprises.

4) Unbalanced development of regional business: The regions with relatively large year-on-year growth of main business income in recent two years are mainly caused by the expansion of smart logistics business in the region. Therefore, the application of new technologies and the promotion of business transformation and upgrading as soon as possible are effective means to solve the imbalance of business development.

5) Business transformation risk: According to the "Fourteenth Five Year Plan", while leading the strategic business, Zhongchu Smart logistics will actively promote the development of characteristic business and innovative business, and strive to find new profit growth points through transformation, upgrading, capital operation and other ways and means, which may affect the company's phased operating results. However, from the perspective of industry development trend and operating results in recent two years, as long as the planning strategy is firmly and correctly implemented, Seize the first opportunity and maintain the leading position of the enterprise, which will further realize the competitive advantage of the enterprise in the future.

4. Conclusion

In this paper, the strategic choice path of intelligent logistics enterprises based on the Internet platform is outlined with the example of Zhongchu Smart logistics. We start with the Internet's entry into China and its impact on the logistics industry. Then, we analyzed the current situation of China's Internet based freight industry; Then, it introduces the current situation of Zhongchu Smart logistics, one of the leading enterprises of network freight transportation, and focuses on the strategic selection points for the transformation of Zhongchu Smart logistics to an intelligent logistics enterprise based on Internet platform, mainly from four aspects: business model, service products, technology application, and organizational structure. This paper also discusses the opportunities and challenges of intelligent logistics enterprises in the network freight industry with the example of Zhongchu Smart logistics. To sum up, under the current complex international and domestic economic situation and the industry's own development status quo, intelligent logistics enterprises based on the Internet platform are still facing many research and challenges in strategy formulation and path selection. At the same time, due to the imperfect rules and standards of the industry and the regulatory system, the application of new technologies, especially "smart" technologies, is not yet mature in China, and new business models and new platform operations need to be built and expanded, In particular, the innovation of intelligent logistics value-added services and network platform collaboration have not been discussed in depth [17], which also relates to the future growth direction of the industry. To sum up, challenges and deficiencies also breed opportunities and development. The enterprise strategic planning includes business model, service products, technology application, organizational structure, smart platform direction, etc. With the change of internal and external environment and the development of the enterprise itself, there will be more mature or innovative initiatives or direction choices. Of course, this paper mainly selects one of the more typical leading enterprises in the industry as the research object, and the research conclusions are both representative and limited. It is hoped that the discussion in this paper can help promote the innovative development of China's intelligent logistics enterprises, improve the application ability of Internet based platforms and advanced technologies, and improve the efficiency and competitiveness of the industry in the future.

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